Looking Up, Down, Across and Back: development of a design management tool for craft practitioners and a discussion of its implications for future craft education

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Abstract

What is the new business of design and by default the responsibility of being a designer? How can designers craft their future, understand practice as a portfolio of experience, knowledge and skill with underpinning values that transcend subject specific boundaries? What is meant by the term 'craft practice' in today's world? How *do* we evaluate excellence in practice? How *should* we evaluate excellence? Drawing on post-doctoral research concerned with communication of design and craft, changing perceptions and developing reflective methods for improving quality in creative practice, this discursive paper will describe a new framework for communicating craft practice. It will use this framework as a basis for analysing progress in practice and developing a framework for excellence within craft. On closing, it calls for the missing discourses of management and innovation to become a critical part of future craft education.

KEYWORDS: craft, cultural change, design management, visualisation, critical craft

Introduction

Irrespective of the life and times we live in, our quest for achieving, maintaining and redefining excellence is an aspiration. Realising this goal is often achieved through the application of new knowledge developed through research and, within academia this is a primary concern. In the context of paradigmatic change this responsibility is heightened. In craft, for example, a need for

the design and creation of new management framework(s) of excellence has emerged from this increased responsibility and with it, development of language within practice.

Quality is connected to mindfulness and mindful design proposition(s) appear through a series of questions, observations and insights; the vision develops through a deeply rhetorical conversation, which occurs in multiple languages through the entire design process (Valentine, 2004). As a journey it is influenced by culture, economics, politics, society and technology, guided by values and filled with emotional 'highs' and 'lows' – a jamming of confusion, delight, bewilderment, exhaustion, exhilaration, frustration and satisfaction. This creative process of design has received heavy investment from academic research (1970-present), across a spectrum of subjects – engineering, product, philosophy, management, textiles, interaction, to name but a few. The work of the European Academy of Design (EAD) offers a sense of scale of this investment (for example, Biggs, 2001; Chow et al, 2007; Davey et al, 2007; Friedman, 1999; Fry, 1999; Gornick, 1997; Gowans et al, 2003; Hekkert, 2001; Hollins, 1997; Julier, 1997; Kristensen, 1997; Strickfaden et al, 2009; Walker, 2009 and, Wood, 2007). Outside of EAD, other notable works (which are by no means exhaustive) include Richard Buchanan (1994; 1995), Nigel Cross (1999), Anthony Dunne (2005) and Bill Moggridge (2007). The new knowledge has been invaluable in understanding the nature of design and its role in contemporary life. However, as we embrace the second decade of the 21st Century we find ourselves in an era where the boundaries between subjects are increasingly blurry and the relationships increasingly complex. The central challenge, irrespective of profession, is the interdependent and inter-related global nature of problems.

The resultant problem space is highly dynamic with an elevated demand for the effective exchange of knowledge and skills across cultures and languages. The environment stresses a rethink of how we think and why we think the way we do. As Einstein famously suggested, if we are to make progress and resolve the problems of our time, we need to change our mindsets from the ones that created the problems in the first place (Einstein cited in Calaprice, 2005). In design, a transformation in practice is underway in a variety of ways, including the development of design as a strategic discourse (Alben, 2002; Borja de Mozota, 2006; Cooper, Junginger and Lockwood, 2011), new methods focusing on participation and language (Kimbell, 2011; Sanders, 2010; Stappers, 2008) and alternative methodologies such as the work of Terry Irwin (2012) who argues for design to create a more holistic framework for practice where "people, planet *and* profit" is the context for creating solutions for "meaningful change". An emphasis on design process thinking, its underpinning values (such as dialogue, people and serious play) and associated design competencies (such as improvisation, visualisation and teamwork), has resulted in new areas of practice such as Service Design and consolidation of infant practices such as

Design Management. In the emerging landscape of design in action, knowledge exchange between public, private, volunteer and third sector organisations and across disparate fields of inquiry is facilitating the creation and application of new values, public awareness, business and social practices (AHRC, 2012; Inns, 2010; Kimbell, 2011).

In relation to craft, design process thinking and its associated research have much to offer the discipline as the conception and planning of ideas underpins both fields of inquiry and, both are concerned with the integration of technical, material and aesthetic issues existing within a social, cultural and philosophical framework. The key difference between the two disciplines lies in their approach to manufacturing or production, and as a consequence, the related markets and audiences.

Reflecting on design process thinking research is the context for reconsidering craft in relation to global change.

Craft: UK context

The craft sector has witnessed an upsurge in critical debate this past decade and has much to be encouraged by as a result of the increased attention. Alongside a plethora of new books dedicated to the debate, most notably the work of Glenn Adamson (2007; 2010; 2013), there is the addition of a first series of academic journals, namely, The Journal of Modern Craft (published by Berg in 2008) and the journal of Craft Research (published by Intellect in 2010). In the UK, new knowledge and greater awareness of craft was supported by, for example, the emergence of the Arts and Humanities Research Council (2005), the arrival of Craftscotland (2007) and the continued work of the Crafts Councils in Ireland, London and Northern Ireland. This recent investment is significant; it denotes a transformation in attitude and behaviour towards the leadership and management of craft in the contemporary world.

From this perspective, it is reasonable to suggest that momentum has gathered and the issue of why craft needs to rethink its cultural, economic, political, social and technological relations with the world is being attended to. Emerging from this landscape is the exigent problem of mindfully managing this asset to receive a return on investment that effectively supports craft in all its guises; the asset being how craft engages with the principle of uncertainty. Sustaining change is now the critical challenge.

Part of the 'sustainability' plan, proposes the author, is a new strategy for craft education and a new addition to be made to the lexicon of craft, that of the term 'critical craft': an analytical form emerging from the praxis of craft research, concerned with scholarly questioning of an idea, its

place and impact in the real world. For the author, critical craft has been built upon her design research (2004; 2009) and focuses on articulating craft as a strategy, developing reflective management tools to support innovative practice (2007a; 2007b; 2010; 2011). In this work, the development of new mechanisms for partnership creation and relationship management between higher education, the craft sector and the public is integral, with prototyping a primary method for extending the dialogue.[1] That is not to say other people are not engaging in this emergent practice or, that there is one particular 'form' associated with it, rather it is simply a means of capturing and contextualizing the 'change' and a proposition as to how it can be nurtured and extended.

Critical Craft: an example

Drawing on the methodological work of sociologists Bentz and Shapiro (1998) the author proposes a shift from the mainstream model of communicating professional practice; from craft as a material and technical concern for making an object to that of craft as a life-world[2]. The perspective of craft as a lifework is an ethos developed through time where market, method, attitude and behaviour evolve within a mixture of life experiences, for example, behavioural tendencies, educational background and cultural engagement activities. This vista is of craft as a constantly moving and continually growing process, with embedded layers of meaning and experience: layers of activities running concurrently through the everyday life of an individual. The deep personal tendencies and individual values of the maker are integral.

Adopting the methodology of Mindful Inquiry (Bentz and Shapiro, 1998) and using a series of interviews and visual mapping techniques the layers of activity effecting an individual's decision-making are identified. Figures 1 and 2 reveal the outcome of this process and in doing so, an example of craft as a lifeworld is offered.

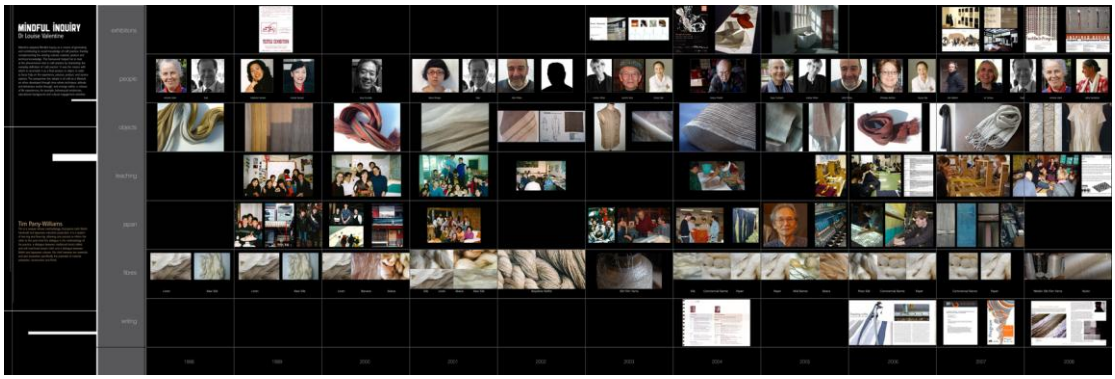

Figure 1. A pin-size overview of the 10-year visualization map depicts a hand woven textile designer's craft practice. From top to bottom, the concurrent layers

of activity that constitute 'craft practice' are exhibition participation, the people in his life who influence his thinking, the objects of his craft, the teaching undertaken in Britain and Japan, his sojourns to Japan, the textile fibres directing his thinking and, engagement with writing for academic and professional practice journals.

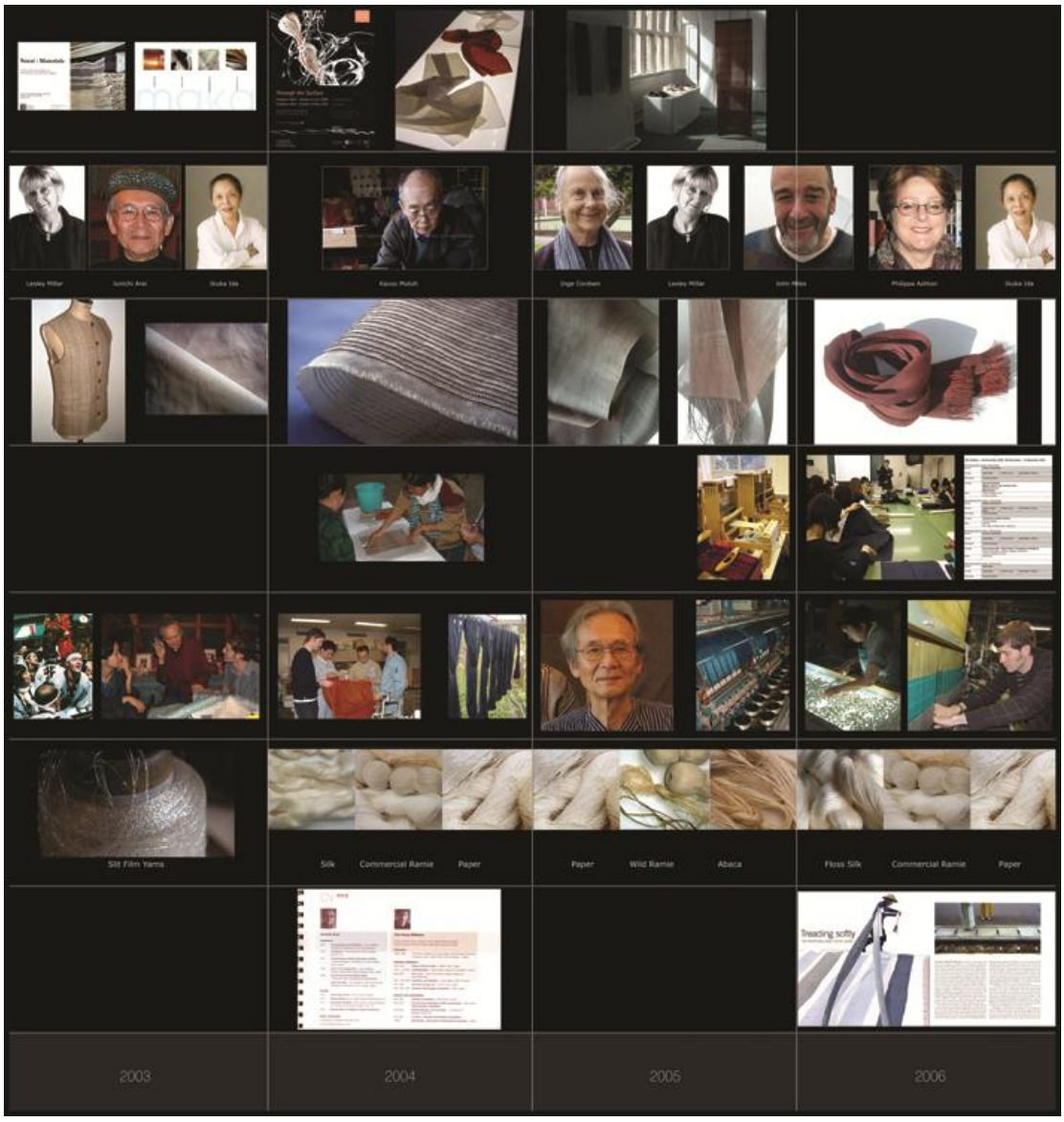

Figure 2: A snapshot of (four of the ten-year) visualisation map or 'cultural enrichment cycle' for the woven textile designer, created by the author, allowing greater detail to be observed. The visualization map offers an alternative viewpoint from which to understand the term 'craft practice'.

The layers of activity in this example are participation in exhibitions, people, personally designed craft objects, teaching, sojourns to Japan, textile fibres and, writing (academic and non-academic). Why? It is a tradition in craft that the exhibition is a primary means of developing a business and place in the market. This is evidenced in the plethora of exhibitions designed and staged (annually) by national UK institutions and organisations such at the Victoria and Albert Museum, Crafts Council, the Dovecot and National Museums Scotland. Exhibition is a primary means of testing the market and selling work, demonstrating artistic ability, cultural sensitivity, political positioning, aesthetic sensibility and intellectual integrity. Exhibiting is a way of connecting practitioners with the public and provides an opportunity for practitioners to assess their personal values and aesthetic direction. It is a way of educating and exchanging knowledge, skills and expertise. It can also be a means of attracting a patron as is clearly evidenced in the art world, through for example, the work of artist Damien Hirst and patron and collector Charles Saatchi. Therefore, in interview conversation with this individual craft person, the question was asked: To what degree, if at all, do you participate in exhibition(s)? Do you perceive this as a key part of your practice? If yes, can you detail the exhibitions you have participated in? Contribution to exhibitions began in earnest at the midway point of the first ten-years of practice; participation increased in intensity as the geographic spread was international and cross-cultural.

People are influencers; they listen and question our ideas, helping us to 'see' for example, assumptions, glitches and alternative perspectives more clearly. People are also supporters; encouraging us to accept challenges and to persevere when we are tested. Therefore working with the craft designer, the questions were asked: to what degree, if at all, do people influence key decision making in your craft thinking? In the intimate space of developing an idea, do you allow people 'in' to your process and, if so, who are they? People were a definite part of the craft dialogue for this individual, and 17 people were cited as having direct influence with three of these people being credited for deeper, sustained impact.

Objects are the end result of the craft process of making. They are the primary vehicle for entering a market and establishing a position within it. The mainstream categorisation of craft objects includes basket weaving, ceramics, glass, jewellery, silversmithing and textiles. What objects have resulted from your process of making and in your mind, exemplify your craft in each year? In this example, hand woven textiles (produced by the maker in the UK) were made to create products such as fashion accessories and garments. Industrially woven textiles (designed in collaboration with Japanese company and manufactured in high volume) were also created to service, for example, the European haute couture market.

Teaching is a recognised means of generating income for craft practitioners, most often in a part-time capacity. This can be partially attributed to the fact that in the UK today, annual income for the majority of professional craft practitioners is approximately £16,000, which is significantly less than the national average wage which currently stands at £22,568 (www.ons.gov.uk statistics for July 2011). Teaching is also a means of developing abilities to communicate ideas, project manage, inspire people, learn new skills and network. Part-time teaching was identified as a form of practice within this woven textile designer's portfolio and was duly mapped in the associated year(s), across the ten-year framework. It essentially featured from the very beginnings of his professional practice and steadily gained significance over the ten-years to the point where undergraduate teaching is a fixed aspect.

In British Higher Education environments (i.e. university which is where this teaching sits), research is an embedded feature. Subsequently, in questioning the role and impact of teaching on craft decision-making, the activity of writing was identified as a reflective tool which developed the practice. Both academic and industry writings were identified as ways in which the designer's decision making for craft was supported. This aspect of practice appeared only latterly in the individual's work but (through questioning) the personal experience was found to have impacted significantly on developed understanding of the values underpinning their craft practice, specifically collaboration, prototyping, time, repetition and intimacy.

Inspiration comes in many guises and within contemporary UK design and craft education, developing cultural awareness and experience is directly nurtured as a way of understanding what it is to be inspired and be inspiring. Has the ability to inspire and be inspired been nurtured in professional craft practice? If so, how has it? Travel was identified, as a means with which inspiration was cultivated through sojourns to Japan. But, to what degree did it feature? A substantial and sustained investment of time through living in Japan and working with international Japanese textile designers and manufacturers was made, leading to a unique cross-cultural collaborative methodology for woven textiles design. The methodology values hand produced and industrially manufactured designing in equal measure, with knowledge from processes, markets and technologies working intimately together to create contemporary design(s).

Natural and manmade fibres (in their raw state such as abaca, banana, flax, paper, linen and silk) were also identified as a key means with which inspiration and ideas were fostered in the craft person's thinking. The specific types of fibres were subsequently identified and visually mapped along the timeline. They are a central tenet of this designer's voice and often lead decision-making across the entire process (from conception to planning to realising a physical) craft. The

palette of fibres is relatively small (with 11 identified over the ten year period). It contains predominantly natural fibres and all are purposefully chosen for their behavioural tendencies and personality traits. They are seen to reflect the values underpinning the individual's practice, such as authenticity, integrity, longevity, sustainability and beauty.

In constructing a 10-year timeline of professional craft a new definition of 'craft practice' emerges, re-presenting it as a multi-dimensional, interconnected, living process: a dynamic series of related activities and competencies, nurtured through time to facilitate creative, cultural, economic and/or spiritual wellbeing. In doing so it widens the concept of craft.

Arguably, the visual redefinition affords the practitioner a means with which to understand development in their craft and offers a framework for supporting growth. It offers a means with which to engage and reflect on why, how and what they are making. It potentially facilitates how the level of innovation in practice can be heighted and hindered and where change(s) could me made to enhance craft. For example, let us take the constructed map in figure 2a to demonstrate where a reflective conversation could begin: what circumstances do you operate under most effectively? What are the key competencies within your practice? Are these all of your professional competencies and, if not, which one(s) are not captured in the map? In observing your recent practice can you identify whether the journey is linear, moving in a forward direction, laterally or backwards? Is this how you would like it to proceed?

The 10-year visualization map encapsulates the working life and environmental constructs in a practitioner's work. The model has the potential to act as a management tool for ongoing use by practitioners to enable them to critically reflect; to understand how they operate within certain parameters and what effect(s) apparent disparate elements have on their practice and, to what degree if at all, the level of innovation in their craft is progressing.

Making Changes in Craft Education

In the 20th century the mainstream approach to production was for a craftsperson to undertake sole responsibility; it essentially underpinned the craft methodology. Indeed, the aforementioned woven textile designer operates, in part, using this mainstream model. Over the period 2005-2010, in the author's study of 'Mindful Craft: past, present and future practice' a number of observations were made, including the introduction of co-production and community involvement in the creation of ideas and their final forms (White, 2010); the employment of co-creation, where new work is developed collaboratively (Marshall, 2007; Chicks on Speed, 2010) and across cultures (Parry-Williams, 2007); use of craft knowledge as a means of designing with interactive technologies (Kettley, 2007; Wallace, 2004; White and Steel, 2007), the re-modelling of

computer programmes to produce individually crafted objects using CAD-CAM (Masterton, 2007) and, a general increase in use of highly sophisticated technologies to design and manufacture one-off or small batches of objects (Bunnell et al, 2007; Mann, 2010). These new developments indicate to a degree, and for some craft practices, a lessening of the idea of skillful making being a pre-requisite of future craft. It also opens up the craft debate enabling broader and more open methodologies for craft to engage with.

Craft practice has changed and the disciplines of design have changed. The old disciplines include (but are not limited to), visual communication, industrial design, interior design, architecture, interaction design. And the new disciplines include design for service, design for innovation, design for experience, design for transformation and design for sustainability (Sanders, 2010). Inherent in this shift is a greater emphasis on social innovation in design and through design. We see for example, through MIT's 'Future Craft' programme (Bonanni and Parkes, 2010) the impact of digital media on product design whereby new methodologies addressing,

> *"the fundamental problem of* what *should be made and* how *to make it … [they] consider how the processes of design and production can be used to reflect new social values and to change dominant cultures of practices … addressing design as both a process and a result of a process." (Bonanni et al 2008: 2)*

Collective intelligence and deeply participatory ways of identifying problems and solving problems are now the norm in design. This is a strategic and an operational shift. But what is the impact of this transformation on craft education where design is a fundamental part of the methodology? What new strategies need to be created to support craft practice and, the future craft sector? I propose that this is a leadership issue and suggest design management as a suitable lens with which to observe, audit, reflect and transform the practice of craft education. There is a fundamental need to make sustainable connections between arts organisation, businesses, charities and education that are focused on the business of programmes of learning for future craft education. There is a responsibility of research to offer educational institutions a return on investment in terms of pedagogy. The impact of craft and design research has arguably yet to be fully considered in this way in the UK. Yet, if it is not, research cannot help the sector and the professional practice of craft. It is suggested that the co-design and development of a new strategy for craft education arguably lies in the spaces in between each stakeholder in the sector.

At the moment a British craft practitioner (for example, a jeweller or a textile designer) receives traditional design training in an undergraduate programme of learning and, should they opt to engage in postgraduate study, they are often encouraged to move away from this practice and advised to work towards the aforementioned new disciplines of design, such as design for

services or innovation. Here, in this learning space, much of the making skills specific to a craft are 'shelved' and in doing so, the investment in developing the practice of craft is diluted. It is incumbent to ask what value this brings to craft business rather than assume it is helpful and effective in terms of performance and excellence. Are we inadvertently undermining craft by not offering a graduate programme befitting to craft in the 21st century? How should we co-create programmes of learning that combine the principles underpinning craft business practices with the new markets and their associated values?

The development of method(s) for craft is recognized and attended to in British design education (such as interdisciplinary working or new digital manufacturing methods) and without undermining the significance of this development it is arguably insufficient as it avoids the issue of strategy in craft education. Subsequently the context for evaluating new forms of design in craft practice remains unresolved. Indeed, it is unattended to in a meaningful way and to a degree, the problem of over production and mass consumption remains - albeit in a different form (i.e. process). If the problems of the modern world are increasingly chaotic, then a key responsibility is to deepen knowledge and understanding of why and how craft practice contributes to and lessens the chaos. At present there are two identified and inter-related missing discourses in craft education that can potentially develop understanding of this future direction, that of management and innovation.

The paper presents the challenge for designers and craft education in the U.K. as being more complicated than simply understanding the industrial contextual shift from manufacturing to service, where traditional subjects such as Advertising or Graphic Design or Product Design, including textiles and jewellery, have moved from being a concern for art to a concern with science. It is essentially a proposal for cultural change where leadership for craft and language of craft are directly incorporated into Higher Education research and teaching programmes: a mindset more befitting to the problems of the day.

In closing, there are two management suggestions made in this paper. A shift in communication, to view craft as a system rather than a market, method or object; a series of dynamic inter-related processes occurring on multiple levels in different time-frames, often with conflicting agendas. The second suggestion is for craft to extend its dialogue and engage directly with the discourses of innovation and management to create effective evaluation matrices. Through further development of the concept of critical craft, the author seeks to investigate this hypothesis.

Notes

[1] A 'lifeworld' is essentially 'the world of everyday life'. For example, the author's life is situated within the field of design, having trained as an industrial designer (textiles) and developed her visual thinking through interactive media over the past decade. Richard Buchanan's philosophy of design has shaped her knowledge of design and her understanding of its role within contemporary society and culture. Buchanan's work emphasises the rhetorical dimension of design thinking and is discussed in the context of the liberal arts. He articulates design as both a language and a meta-language.

[2] 'Prototype: craft in the future tense' is an example of this work; a two-day symposium co-convened with the V&A, in 2010. Further information can be found at: http://www.dundee.ac.uk/djcad/prototyping/ Accessed 24 September 2012.

References

AHRC (2011). Knowledge Exchange and Partnerships. http://www.ahrc.ac.uk/Funding-Opportunities/Knowledge-exchange-and-partnerships/Pages/Knowledge-exchange-and-partnerships.aspx Accessed: 01 October 2012

Adamson, G. (2007). *Thinking Through Craft*. Oxford, U.K.; New York: Berg.

Adamson, G. (ed) (2009). *The Craft Reader*. Oxford, U.K.; New York: Berg.

Adamson, G. (2013). *The Invention of Craft*. Oxford, U.K.; New York: Berg.

Alben, L. (2002). Navigating a Sea Change, in *Design Management Journal*, Volume 13, No. 2; Spring 2002, pp. 47-56

Biggs, M. (2001). I See What You Mean, in '*d3 desirer designum design*, 4th *European Academy of Design Conference proceedings,* 10-12 April 2001, University of Aveiro, Portugal.

Bentz, V. M. and Shapiro, B. (1998). *Mindful Inquiry in Social Research*. Newbury Park, London, New Delhi: Sage Publications.

Bonanni, L., Parkes, A. and Ishii, H. (2008) Future Craft: How Digital Media is Transforming Product Design. In: *CHI '08 CHI Conference on Human Factors in Computing Systems Extended Abstracts on Human Factors in Computing Systems* (Florence, Italy, April 05– 10, 2008). New York, NY: ACM. pp. 2553–2564.

Bonanni, L. and Parkes, A. (2010) Virtual Guilds: Collective Intelligence and the Future of Craft. *The Journal of Modern Craft*, 3(2), 179–190.

Buchanan, R. (1994). Branzi's Dilemma: design in contemporary culture, in Buchanan, R., Doordan, D. and Margolin, V. (2010) *The Designed World: images, objects, environments*. Oxford, UK; New York: Berg.

Buchanan, R. (1995). Rhetoric, Humanism, and Design. In R. Buchanan and V. Margolin, V. (eds.) (1995). *Discovering Design: Explorations in Design Studies.* London: University of Chicago Press. pp. 23–66

Bunnell, K. Jorgenson, T., Marshall J and Masterton, D. (2007). Autonomatic. In, Follett, G., Moir, S and Valentine, L. (eds.) (2007b). *Future Voices: celebrating Diversity*, Exhibition Proceedings, Duncan of Jordanstone College of Art and Design, University of Dundee, July 4th- August 4th. pp24-29.

Cross, N. (1999). Natural Intelligence in Design, in *Design Studies*, 20 (1), 25–39.

Calaprice, A. (ed.) (2005). The New Quotable Einstein. USA: Princeton University Press.

Chicks on Speed (2010). ~~*Don't*~~ *Fashion Art Music*. London: Booth-Clibborn Editions and Dundee Contemporary Arts.

Chow, R., Jonas, W. and Schaeffer, N. (2009). Peircean Abduction, Signs and Design Transfer, in 8th *European Academy of Design international Conference proceedings,* 1-3 April 2009, The Robert Gordon University, Aberdeen, Scotland.

Davey, C., Wootten, A., Thomas, A., Cooper, R and Press, M. (2007). Design for the Surreal World? A New Model of Socially Responsible Design, in *Dancing with Disorder: design discourse and disaster*, proceedings of the 7th *European Academy of Design international Conference proceedings,* 11-13 April 2007, Izmir University of Economics, Turkey.

Dunne, A. (2005). *Hertzian Tales*. Boston, USA: Massachusetts Institute of Technology.

Friedman, K. (1999). The Problem Comes First: establishing design as a science-based profession, in *Proceedings of the Third European Academy of Design Conference*, Sheffield Hallam University, UK, 30 March – 01 April, 1999.

Fry, T. (1999). Redirective Practice: defuturing, *Proceedings of the Third European Academy of Design Conference*, Sheffield Hallam University, UK, 30 March – 01 April, 1999.

Gowans, G., Campbell, J., Astell, A., Ellis, M., Alm, N and Dye, R. (2003). Designing CIRCA: a multimedia conversational aid for reminiscence intervention in dementia care environments, in proceedings of the *5th international conference of the European Academy of Design*, April, Barcelona, Spain. http://www.ub.edu/5ead/princip5.htm [Accessed 01 October 2012]

Gornick, N. (1997). The Designer as Strategist, in proceedings of *The Second European Academy of Design Conference*, Stockolm, Sweden.

Hekkert, P. (2001). The Experience of Design, in '*d3 desirer designum design*, 4th *European Academy of Design Conference proceedings,* 10-12 April 2001, University of Aveiro, Portugal.

Hollins, B. (1997). So Tomorrow Doesn't Come As a Surprise: suggestions for dealing with the future, in proceedings of *The Second European Academy of Design Conference*, Stockholm, Sweden.

Inns, T. (ed.) (2010). Designing for the 21st Century: interdisciplinary methods and findings. Surrey, UK: Gower Publishing Limited.

Irwin, T. (2012). Transforming the Design Process to Create Better Solutions, in *Solutions for a sustainable and desirable future*, Volume 3, Issue 2, Page 1, April 2012.

Julier, G. (1997). Re-Drawing the Geography of European Design: the case of transitional countries, in proceedings of *The Second European Academy of Design Conference*, April 1997, The Royal Institute of Technology, Stockolm, Sweden.

Kettley, S. (2007). Reflections and Transparency: Rhythms in Experiences with Craft, in Follett, G. and Valentine, L. (eds.) (2007). *New Craft - Future Voices,* Conference Proceedings, Duncan of Jordanstone College of Art and Design, University of Dundee, July 4th-6th. pp 304-310

Kimbell, L. (2011). Designing Future Practices, a paper presented at *Making Crafting Designing conference at the* Akademia Schloss Solitude, Germany.

Kristensen, T. (1997). Design For Quality of Life, in proceedings of *The Second European Academy of Design Conference*, April 1997, The Royal Institute of Technology, Stockolm, Sweden.

Mann, G. (2010). *Crossfire: natural occurrence series*. Edinburgh: Studio MrMann. http://www.mrmann.co.uk/natural-occurrence-series-crossfire Accessed 01 September 2012.

Marshall, J. (2007). Coded Ornament: Contemporary Plasterwork and the use of Digital Technologies, in Follett, G. and Valentine, L. (eds.) (2007). New Craft - Future Voices. Special Issue of *The Design Journal*, Volume 10, Issue 2, pp4-21.

Masterton, D. (2007). Deconstructing the Digital, in Follett, G. and Valentine, L. (eds.) (2007). *New Craft - Future Voices,* Conference Proceedings, Duncan of Jordanstone College of Art and Design, University of Dundee, July 4th-6th. pp7-24

Moggridge, B. (2007). Designing Interactions. Boston, USA: Massachusetts Institute of Technology.

Parry-Williams, T. (2007). Craft: Industry Interface – a dialogue between hand, heart and machine (an Anglo-Japanese collaboration), in Follett, G. and Valentine, L. (eds.) (2007). *New Craft - Future Voices,* Conference Proceedings, Duncan of Jordanstone College of Art and Design, University of Dundee, July 4th-6th. pp 73-85

Sanders, E. (2010). Prototyping for design spaces of the future, invited keynote at, '*Prototype: craft in the future tense'* international symposium, University of Dundee, Scotland, 10-11 June 2010.

Stappers, P.J. (2008). Doing Design as Part of Doing Research, in Michel. R. (ed.) (2007). *Design Research Now: essays and selected projects*. Germany: Birkhauser. pp81-91

Strickfaden, M., Devlieger, P. and Heylighten, A. (2009). Building Empathy Through Design, in 8th *European Academy of Design Conference proceedings,* 1-3 April 2009, The Robert Gordon University, Aberdeen, Scotland.

Valentine, L. (2004). *The Activity of Rhetoric in the Process of a Designer's Thinking*. Unpublished Thesis. University of Dundee, Scotland.

Valentine, L. and Follett, G. (eds.) (2007a). *New Craft Future Voices*, proceeding of the international conference, 4-6 July 2007, University of Dundee, Scotland. Dundee: Duncan of Jordanstone College of Art and Design.

Valentine, L., Follett, G and Moir, S. (eds.) (2007b). *Future Voices: Celebrating Diversity*, proceeding of the international exhibition, 4 July – 4 August 2007, Cooper Gallery, Dundee, Scotland. Dundee: Duncan of Jordanstone College of Art and Design.

Valentine, L. and Ivey, M. (2009). Sustaining Ambiguity and Fostering Openness in the (Design) Learning Environment, in *the Journal of Art, Design and Communication in Higher Education*. Volume 7, Issue 3, pp 156-167.

Valentine, L. (2010). "Past and present craft practice: a frame of reference for mindful inquiry research and future craft", in Valentine, L. and Follett, G. (eds.) (2010). *Past, Present and Future Craft Practice*, Duncan of Jordanstone College, National Museums of Scotland and the University of Dundee, pp.72-83.

Valentine, L. (2011). Craft as a Form of Mindful Inquiry, in *The Design Journal*, Volume 14, Issue 3, pp 283-306.

Walker, S. (2009). Gentle Arrangements: artefacts of disciplined Empathy, in 8th *European Academy of Design Conference proceedings,* 1-3 April 2009, The Robert Gordon University, Aberdeen, Scotland.

Wallace, J. (2004). Sometimes I forget to remember, in, Conference Proceeding, *Challenging Craft*, Gray's School of Art, Robert Gordon University, Aberdeen, 8-10th September 2004. http://www2.rgu.ac.uk/challengingcraft/ChallengingCraft/papers/jaynewallace/jwallace01.htm Accessed 01 September 2012.

White, H. and Steel, E. (2007). Agents of Change: from collection to connection. In, Follett, G. and Valentine, L. (eds.) (2007). New Craft - Future Voices. Special Issue of *The Design Journal*, Volume 10, Issue 2, pp. 22-34.

White, H. (2010). *Portage: Crossing Points*, Bonhoga Gallery, 29 May-27 June, 2010. Exhibition catalogue. Shetland: Shetland Arts Development Agency. p16-19

Wood, J. (2007). Dancing with Disorder: Synergizing Synergies within Metadesign, in in *Dancing with Disorder: design discourse and disaster*, proceedings of the 7th *European Academy of Design international Conference proceedings,* 11-13 April 2007, Izmir University of Economics, Turkey.